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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,027	01/13/2004	X. Steve Yao	12361-024001	3266

20985 7590 06/09/2006

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EXAMINER	
NGUYEN, SANG H	
ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,027	YAO, X. STEVE	
	Examiner	Art Unit	
	Sang Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5 and 9* is/are rejected.

7)☒ Claim(s) *2-4,6-8, and 10-12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (u.s. Patent No. 6,166,845) in view of Wetherell (U.S. Patent No. 4,723,315).

Regarding claims 1 and 9; Ito et al discloses a method and device comprising:

an optical path (C of figure 4 and col.1 lines 60-63 and col.4 lines 45-49) through which light propagates (i.e., pulse chain in figure 4);

a first partial polarization beam splitter (9 of figure 1) in said optical path (C of figure 4) to split by reflection a fraction of the light in one (figure 4, for example, a PBS [9 of figure 1] to a photodiode [15 of figure 4]) from an input beam of a laser (11 of figure 4) to produce a first monitor beam (figure 4);

a second partial polarization beam splitter (6 of figure 4) in said optical path (C of figure 4) to split by reflection a fraction of said light in said one (figure 4, for example, a PBS [9 of figure 1] to a photodiode [15 of figure 4]) from said input beam (11 of figure 4) to produce a second monitor beam (figure 4), wherein said first and second partial polarization beam splitters (9, 6 of figure 4) are oriented to have their polarization axes to be 90 degrees with each other (figures 1-4); and

first and second optical detectors (15, 13 of figure 4) is coupled to an EOS oscilloscope (col. 2 lines 1-60) for converting said first and said second monitor beams into first and second detector signals (i.e., electrical signals from photodiodes [15, 13 of figure 4). See figures 1-4.

U.S. Patent Dec. 26, 2000 Sheet 4 of 4 6,166,845

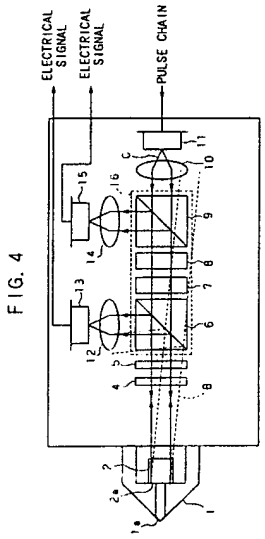

FIG. 4

U.S. Patent Feb. 2, 1988 Sheet 2 of 9 4,723,315

FIG. 3

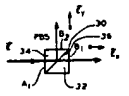

FIG. 4

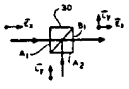

FIG. 5

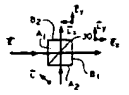

FIG. 6

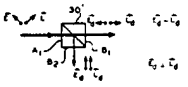

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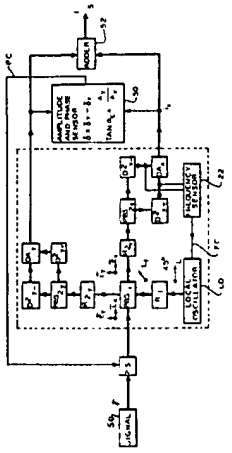
FIG. 11



Ito et al discloses all of features of claimed invention except for polarization beam splitter for splitting reflection a fraction of the light in the one of the first and second mutually orthogonal polarization directions from the input beam and a circuit for receiving said first and said second detector signals and for producing a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction. However, Wetherell teaches that it is known in the art to provide an input polarization beam (E of figure 3) of a laser (SO of figure 11) to a polarization beam splitter (30 of figure 3) for splitting reflecting a fraction of the light in one (Ey component of figure 3) of first and second mutually orthogonal polarization directions (Ex component is perpendicular Ey component and col.1 lines 5-55 and col.5 lines 30-50), and a circuit (i.e., DA differential amplifier and a DL delay line, and an adder [52 of figure 11] or switch [42 of figure 9]) for receiving said first and said second detector signals ($D2_y$, $D2_x$ of figure 11) and for producing a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction (col.7 line 5 to col.8 line 68) figures 1-1-16.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and device of Ito et al with polarization beam splitter for splitting reflection a fraction of the light in the one of the first and second mutually orthogonal polarization directions from the input beam and a circuit for receiving said first and said second detector signals and for producing a difference between said first and said second detector signals to indicate an amount

and a direction of a deviation in a polarization of said light from a known direction as taught by Wetherell for the purpose of eliminating or reducing signal losses in the optics associated with the polarization state of the signal and manipulating the polarization state to maximize the efficiency of differential heterodyne and homodyne detection.

Regarding claim 5; Ito et al discloses all of features of claimed invention except for controlling polarization of said input light according to said difference by controlling a polarization controller disposed in said input beam. However, Wetherell teaches that it is known in the art to provide controlling polarization of said input light (PS of figure 11) according to said difference by controlling a polarization controller (i.e., electronic sensor 50 of figure 11) disposed in said input beam. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and device of Ito et al with controlling polarization of said input light according to said difference by controlling a polarization controller disposed in said input beam as taught by Wetherell for the purpose of reducing or eliminating the sensitivity to polarization.

Allowable Subject Matter

Claims 2-4, 6-8 and 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, taken alone or in combination, fails discloses or render obvious a method and device comprising all the specific elements with the specific combination including of a third partial polarization beam splitter downstream of said first and said second partial polarization beam splitters to split by reflection a fraction of

said light in said one of said first and second mutually orthogonal polarization directions from said input beam to produce a third monitor beam, wherein said third partial polarization beam splitter is oriented to have a polarization axis to be at 45 degrees with respect to said first and second partial polarization beam splitters in set forth limitation of claims 2, 6 and 10.

The prior art of record, taken alone or in combination, fails discloses or render obvious a method and device comprising all the specific elements with the specific combination including of producing a normalized differential signal by dividing said difference by a sum of said first and said second detector signals to eliminate a dependence of said difference on a power level of said input beam in set forth limitation of claim 4.

Conclusion

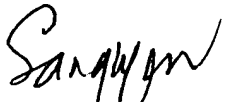
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Han et al (7043122) discloses PMD compensator based on separation of principal state of polarization control; Core (6782211) discloses cross polarization interface canceler; Akatsu et al (5675415) discloses physical quantity measurement apparatus, Morimoto (5502708) discloses optical scanning device; Kondo (4958929) discloses optical fiber sensor; Kondo (4902888) discloses optical fiber sensor; or Carlsen et al (4685773) discloses bireferingent optical multiplexer with flattened bandpass.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

May 30, 2006



Sang Nguyen
Patent Examiner
Art Unit 2877